ROBINSON RIVER AND LITTLE DARK RUN WATERSHED

Project Location and Background

The Upper Robinson River and Little Dark Run watersheds are located in the Rappahannock River Basin in Madison County, Virginia. The Upper Robinson River drains into the Rapidan River, which joins the Rappahannock River, and then drains into the Chesapeake Bay. The Lower Robinson River watershed runs along the border between Madison and Culpeper Counties. The 30,892 acres of the Upper Robinson River watershed comprise forested (84%), agricultural (15%), and residential (1%) land uses. The 124,326 acres of the Lower Robinson River watershed comprise forested (64%), agricultural (34%), and residential and wetland/water (2%) land uses. The 2,334 acres of the Little Dark Run watershed comprise forested (58%), agricultural (29%), residential (12%), and water/wetland (1%) land uses. The Upper and Lower Robinson River and Little Dark Run were initially listed on Virginia's *Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Report* in 1994, 2002, and 2004, respectively, due to violations of the state's water quality standard for fecal coliform bacteria. A TMDL study for the watersheds was completed in August 2005, a TMDL implementation plan was developed in 2011, and implementation started in 2011.

Implementation Highlights

The Robinson River and Little Dark Run implementation project is administered by the Culpeper Soil and Water Conservation District (CSWCD). A state-funded residential septic project started in 2011, a state-funded agriculture project started in 2012, and a 319(h)-funded project started in July 2015. The table on the right shows BMPs implemented since 2012, along with BMP implementation goals for the watershed. Note that pet waste BMP implementation goals are not shown in the table, as they are not currently being addressed. (*continued on page 2*)

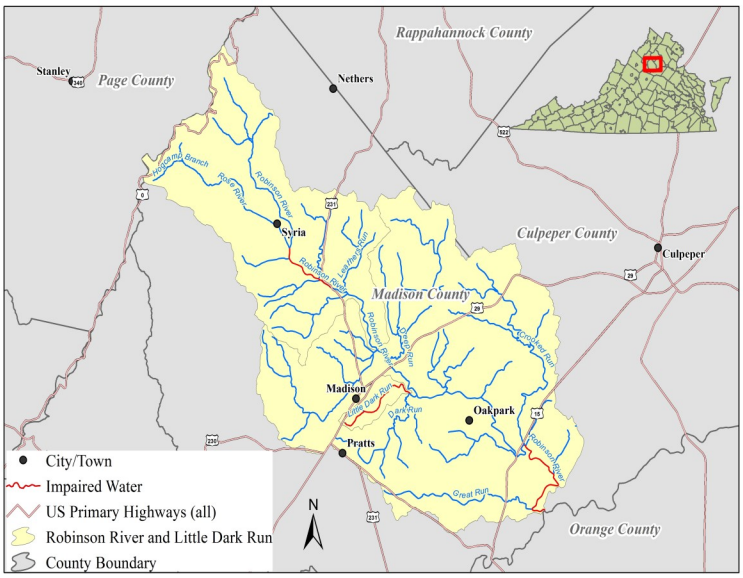


Table 1: Robinson River and Little Dark Run BMP Summary: January 2012- June 2019

Control Measure	Unit	Goal	Installed*	%
Agricultural				
Stream Exclusion Fencing	F	1,483,680	299,899	20
Stream Exclusion Fencing	S	562	78	14
Streamside Fencing Maintenance	F	N/A	154,263	N/A
Pasture Management	A	37,250	1,411	4
Reforestation of Erodible Crop	A	165	9	5
Manure Incorp. into Soil	A	1,363	0	0
Veg. Cover on Cropland	A	325	135	42
Small Grain Cover Crop	A	N/A	3,130	N/A
Harvestable Cover Crop	A	N/A	1,560	N/A
Residential Septic				
Septic Tank Pump-out	S	364	363	100
Septic System Repair	S	436	36	8
Septic System Installation	S	335	17	5
Alternative Waste Treatment	S	85	4	5

A = Acres, F=Linear Feet, S = System; Note: BMP counts only include 319-funded and state VACS. NRCS EQIP funded practices are not included.
*Corrections have been made to numbers of installed BMPs provided in previous annual reports

The Virginia Nonpoint Source Management Program: The Virginia NPS Management Program is managed by the Virginia Department of Environmental Quality (DEQ) and is funded, in part, through grants from the U.S. Environmental Protection Agency, under the Clean Water Act Section 319(h). For more information regarding Virginia's Nonpoint Source Management Program, please visit us on the web at: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx . An electronic copy of this report can be found here: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProjects.aspx General NPS Program questions? email: npsgrants@deq.virginia.gov

Implementation Highlights— Continued

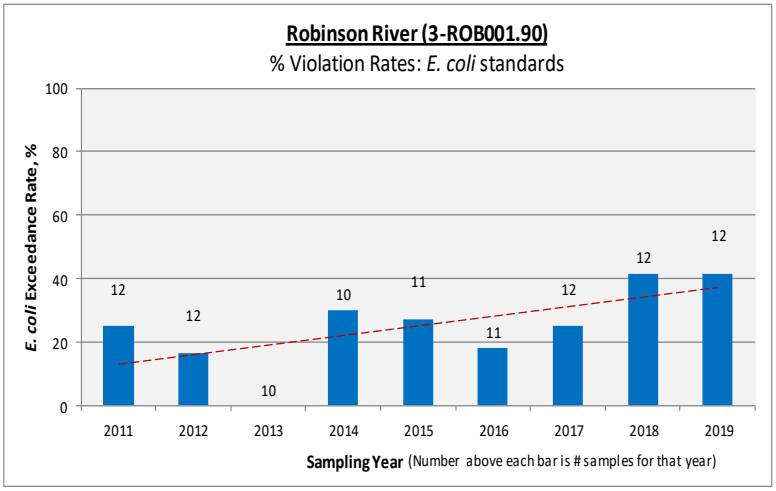
Between July 2018 and June 2019, 51 septic tank pump-outs, 15 septic system repairs, three conventional septic systems, and one alternative septic waste system installation were completed in the watershed. In that same period, eight stream exclusion fencing systems were installed, protecting 57,706 feet of stream. Other agricultural projects completed during this period include 716 acres of small grain cover crop, four acres of reforested erodible land, and 51 acres of woodland stream buffers. Outreach efforts for the project have included newspaper articles, mailings to landowners in the watersheds, and presentations to community organizations. Bacteria reductions from BMP installations are summarized in Table 2 below.

Period	Pathogens (Coliform) (CFU)
July 2012—June 2019	1.53E+16

Table 2: Pollution Reductions for Robinson River and Little Dark Run Watersheds

Water Quality Monitoring Results

Water quality data collected by DEQ for the period of 2011 through 2019 were analyzed to determine the impact of BMPs implemented in the project area on *E. coli* violation rates and associated long-term trends, if any, in water quality. The bar graph at right shows the percent violation rate for samples collected annually at monitoring station 3-ROB001.90, located upstream of the mouth of Robinson River, which did not meet the water quality standard of 235 cfu/100 mL. The number of samples collected each year is shown above each bar. After relatively stable bacteria exceedance levels in 2011-20017, higher exceedance rates occurred in 2018 and 2019. These may reflect of the high frequency and severity of rain events during 2018 and the timing of sampling events relative to storm events in 2019. Monitoring over a longer period of time with consistent trends will be needed to corroborate water quality changes. associated with improved agricultural conservation practices and septic system management.



Graph 1: *E.coli* data for Robinson River (Station 3-ROB001.90), 2003-2019

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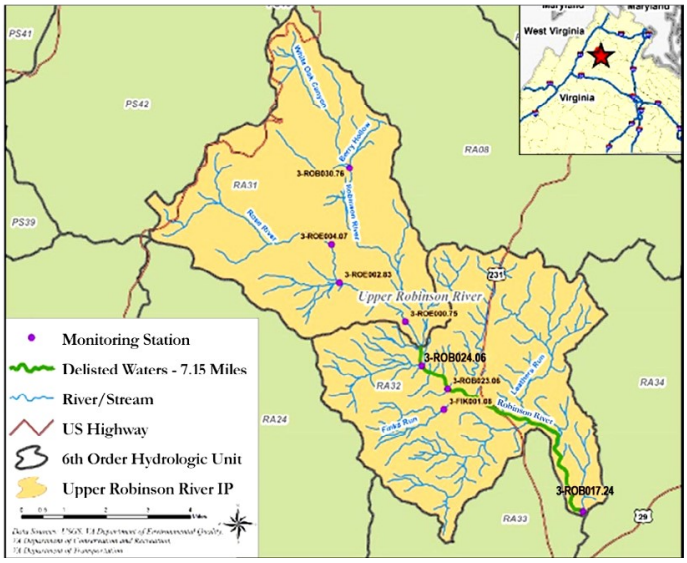
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Quality Success Story

It should be noted that during a period before implementation of the BMPs addressed in this report but after the TMDL was approved in 2005, bacteria violation rates in the Robinson River (Stations 3-ROB017.24 at the Route 638 bridge and 3-ROB024.06 at the Route 649 crossing) have decreased compared to the period prior to TMDL development (2001-2004) indicating improvement in water quality conditions (Graphs 2 and 3).

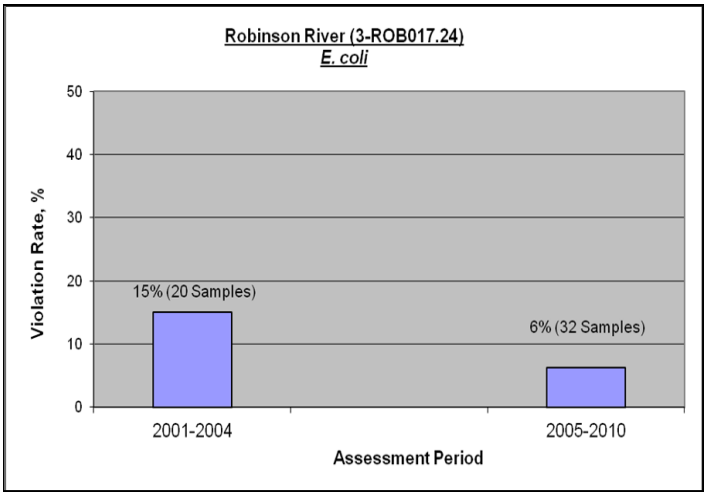


Though they precede 319(h)-funded BMPs in the watershed, the noted improvements coincide with a two-year Water Quality Improvement Fund residential septic implementation project, as well as significant agricultural conservation practices funded by CSWCD using both state and federal agricultural cost-share programs.

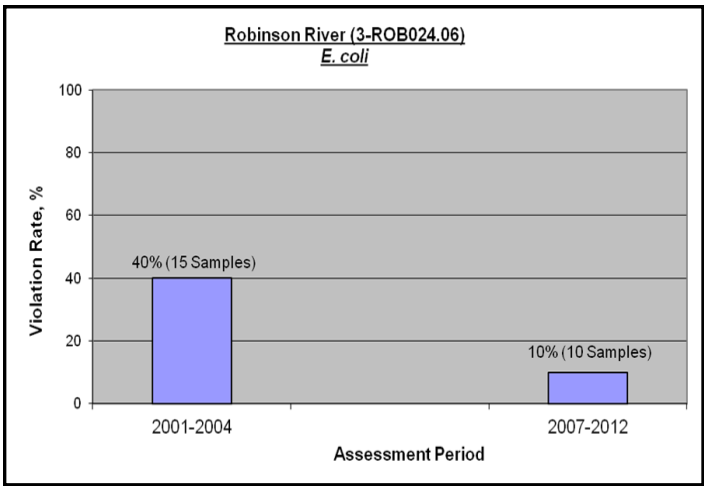
These improvements allowed Virginia to remove from the 303(d) list of impaired waters 4.15 miles associated with station 3-ROB017.24 (in 2012) and 3 miles associated with station 3-ROB024.06 (in 2014). The map above shows the watershed and the extent of the delisted segments.

A NPS success story for EPA publication was submitted in July 2016 and can be found here: http://www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/Success/NPS/Full/Robinson.pdf?ver=2017-09-14-151521-600

More recent monitoring at these stations evidences maintained water quality improvements. In 2018, there were zero exceedances of the standard in six samples taken at station 3-ROB017.24 and one exceedance in ten samples taken at 3 -ROB024.06.



Graph 2: Bacteria Violation Rate for Robinson River (3-ROB017.24), 2001—2010



Graph 3: Bacteria Violation Rate for Robinson River (3-ROB024.06), 2001—2012